

### **CEREAL BOXES**

A cereal company uses cereal boxes that are rectangular prisms. The boxes have the dimensions shown.

- 12 inches high
- 8 inches wide
- 2 inches deep

The managers of the company want a new size for their cereal boxes. The new boxes have to be rectangular prisms. You will evaluate one box design the company proposed. Then you will create and propose your own design for the company.

Requirements for the new boxes:

- The new boxes have to use less cardboard than the original boxes.
- The new boxes have to hold the same or a greater volume of cereal as the original boxes.

1. Determine the volume of the current cereal box with the dimensions 12 inches high, 8 inches wide, and 2 inches deep.

Find the volume,  $V$ , in cubic inches, of each box.

Volume of Original Box:  $V = \underline{\hspace{1cm}} \text{ in}^3$

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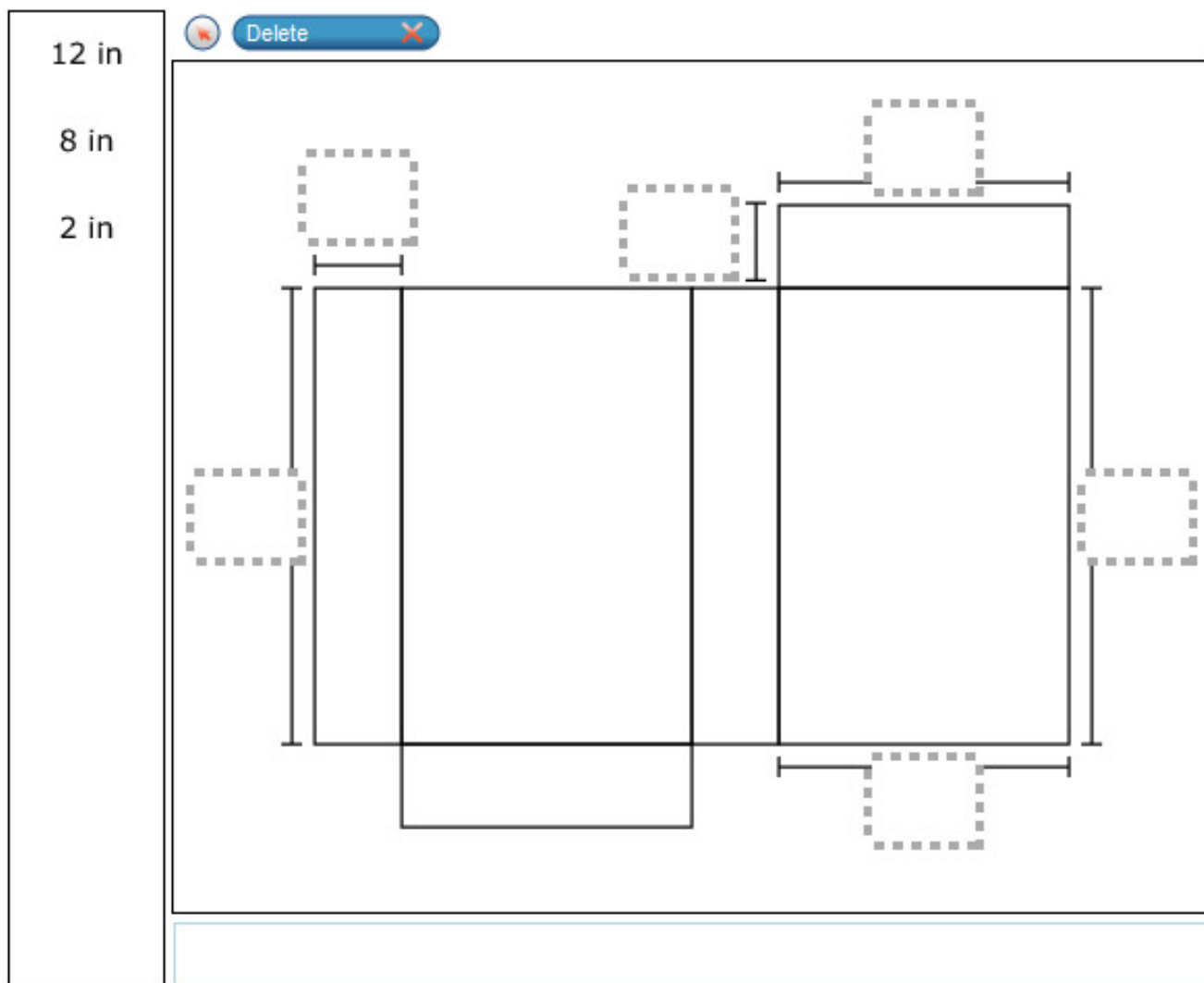
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2. Label the dimensions of the net for the current cereal box with the dimensions 12 inches high, 8 inches wide, and 2 inches deep.



3. Determine the surface area,  $S$ , in square inches, of the current cereal box with dimensions 12 inches high, 8 inches wide, and 2 inches deep.

$$S = \underline{\hspace{1cm}} \text{ in}^2$$

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4. The company proposes a new cereal box with dimensions 10.5 inches high, 7.5 inches wide, and 4 inches deep. The new cereal box is a rectangular prism. Determine if this new box meets each of the requirements. Explain why or why not.



- 5.** Design a new cereal box for this company. All cereal boxes are rectangular prisms. Then explain why your design is better for the company, based on the requirements.

In your response,

- give the dimensions of your box;
- explain how your box meets each of the requirements for the new boxes.